

## REMARKS

The replacement drawings submitted herewith are believed to address the Examiner's objections to the drawings.

A substitute specification has been submitted in an effort to expedite prosecution. The substitute specification includes section headings. It is noted that the objection to the arrangement of the specification appears to take the position that the arrangement and headings suggested by 37 CFR 1.77(b) are mandatory in all applications. It is respectfully submitted that there is no such requirement. However, in an effort to expedite prosecution the substitute specification includes headings that are believed to be appropriate for the present application.

All of the pending claims have been rejected on the basis of the Smyth reference. These rejections are respectfully traversed. Claim 1 has been amended to include the feature of original claim 2 and further clarify that the match is a global match, that the transformation is a global transformation, and that the determined threshold probability is a global threshold probability.

The method described in Smyth is a gradient descent method of identifying **local** minima solutions in time-series data based upon hidden Markov models. In contrast the invention defined by the amended claims is an iterative method for **eliminating groups or regions** of solutions based upon an upper bound **global** probability. Further, the claimed invention uses an elimination procedure based upon an **adaptive global** threshold, which is determined automatically from the current upper bound (see step (iv)). In contrast, Smyth merely uses a local threshold determined by pre-defined models. In the current invention the upper bound converges to the true probability of the solutions over time.

As the Smyth method finds the best **local** match only, it is possible that the Smyth method will eliminate the actual global match (*i.e.* the actual best solution), if the Smyth method gets trapped in a local minimum. In contrast as the regions span the entire transformation space and determine an upper bound of a **global** match between the query and data representation under any **global** transformation (see step (iv)), the entire transformation space is covered by the present invention and so that precludes missing the actual global match.

In Smyth, their thresholds are determined by local modelling. Smyth does not disclose or suggest using upper bound thresholds on the global match.

Furthermore, the present invention uses an adaptive threshold. That is the threshold probability is determined in step (v) based upon the upper bound which has previously been determined in step (iv). In Smyth, no adaptive threshold is used, rather their threshold is determined by **pre-defined** models rather than changing adaptively during iterations of the method.

The method of Smyth is a gradient descent method: *i.e.* merely looking for the local lowest minimum. The invention uses a method based on eliminating regions of solution space so as to identify solution regions (see step (vii)) and then iteratively applying the method to those solution regions to identify further solution regions (see steps (ix) to (xi)).

Therefore the method of Smyth does not include a number of the elements of the amended claims. Further, the method of Smyth is based on a fundamentally different approach (local minima versus global) and it is respectfully submitted that it would not be obvious how to adapt the method of Smyth so as to arrive at the present invention. Further, Smyth does not and cannot provide a number of the advantages of the present invention, such as guaranteeing that the actual global solution is identified. In view of the foregoing, it is respectfully submitted that the claims as currently presented are patentable over the Smith reference and that accordingly, the pending rejections should be withdrawn.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,  
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